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TRENDS IN SCHOOL BUILDING

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TRENDS IN SCHOOL BUILDING

M. LANDRUM

You can see by the make-up of this panel that it is considered that one superintendent is equal to two architects. I will not attempt to substantiate that.

The topic which I am supposed to cover should be largely a duplication of what you heard yesterday morning. I was asked to comment on some trends of education that might affect school building construction. I was not privileged to hear the addresses yesterday morning but I noticed that you heard addresses on the emerging elementary and secondary schools. So, if there is repetition, please remember that there is repetition because there is need for more emphasis. You see, I need to go ahead with these remarks because I need to give the architects something about which to talk when they get up, since if it were not for my remarks they wouldn't have any answers to give.

You know that there have been more changes in educational methods and techniques and in the manner in which they have been received within the last ten years than in the entire history of American education. We are in the midst of widespread and drastic change in education which was probably caused by Sputnik. Paul Mort once said that it took fifty years to institute a change in American educational systems. This is no longer true. Changes in the American educational system are occurring overnight. It used to take great courage to make a change as a true administrator. But today the opposite is true. It takes great courage to resist change, because change in education has become the mode. Change in education has become what is expected. Because of the criticism of education and the blame education receives with reference to spending, this probably is going to be the pattern for the future. I am convinced that educators and the public are determined that we will continue to search for the better mousetrap until we find the best mousetrap. In education there will be continual change in search of this mousetrap. There are innovations which I think will cause concern to those who design school buildings.

First there is team teaching, about which you have heard much. We will learn about the provisions made by designers of school buildings in team teaching; but I think the thing that you may not know is that there are probably as many different versions of team teaching as there are experiments in team teaching. No two resemble each other. When we design a school building which is based upon the Secondary School Principals Association's original proposal for team teaching, we may not be meeting

the need of local school systems' concepts of team teaching. But, certainly team teaching will have its impact on the design of school buildings, as it already has.

I need to remark here on the side that we have made much about flexibility in school buildings. Fifteen years ago when I used your material to do my doctoral dissertation, this was the theme. This was the plea—flexibility. And every scheme that could be conceived has been used to achieve flexibility. But, I contend that we still do not have flexible schools. If we go to the folding partition to accomplish flexibility, we find that there are many disadvantages and unacceptable things about it. If we go to the rigid permanent partitions then we think we have eliminated flexibility. But, nevertheless, team teaching will help.

One-third of the schools of this nation now operate on the nongraded or ungraded plan. This is spreading like wildfire and will change the needs and concepts in school design. Perhaps the greatest immediate breakthrough is that of electronic games. This is another problem in education through design with which we have been groping and have never found a solution: how to provide the simple darkening of a room. You may be an advocate of the blockhouse school—the windowless school. I am not. There are other problems in the use of electronic aids which are flooding the market, many o. which have effects on the design of school building.

There is the use of programmed material. You can walk into the drugstore downstairs and buy programmed material. This concept of individualized construction, of self-instruction, will have a tremendous impact on the design of school buildings because if you design a school building that is going to be used by those who advocate individualized and programmed instruction, with very little, if any, traditional classes, the problem is entirely different.

Then there is the new concept of education which revolves around the mass of new knowledge and the recognition that we cannot teach or hope to teach all which needs to be taught and the thing that we need to teach is quest and inquiry and not facts. This is a research technique. This requires different types of facilities than the traditional or that which we now are experiencing.

There is a trend toward departmentalization in the elementary grades in order to take care of specialization in teaching. This will change building needs.

There is the terrific attention which is being given to the culturally deprived. You say to me what difference does that make to school building design? Experts in this field say that culturally deprived youngsters need different material, different facilities, different techniques of teaching than does the average American child.

A problem that Mr. Fletcher and I run into, and I am sure it is a nationwide problem, is that of tremendous student mobility. You build a school and you think you can keep that school filled for at least the lapse of the bonds that were voted to pay for it. Then you find that, due to this mobility, the building is half filled after ten years. What are you up against now? There is the problem of the increased size of school beyond that which is considered optional, brought about by consolidation, or growth of urbanized schools. What type of designing does it take to produce the desirable factors of the optimum-sized school but still accommodate schools three times as large as the optimum-sized? And then there are the tremendous strides being made in automated computers systems for construction. And, incidentally, the day will come when school buildings will be designed by computers and we can write architects off.

Some computer firm in Houston has presented a scheme—whether they are going to put it into practice or not is unknown—where they propose to program in such a manner that they can make cost estimates in an hour when it now takes several days to do so. Automation in education is coming.

Then there is the growing philosophy of the responsibility of the public schools for education from birth to burial, rather than the accommodation of students from six to seventeen years old.

There is the federal legislation which, in my opinion, is going to have terrific impact on us. The Vocational Education Act of 1963, the anti-poverty bill which was just recently passed, will certainly make a difference.

Some closing unrelated facts about change. The greatest change is the lessening resistance to change. The greatest deterrent to change in education is the profession of education itself. And also the deterrent to education is the product specification—the weaknesses and the failures of standardized tests on which we place so much confidence, to actually measure what needs to be measured. There has been more progress made with architects in the design of buildings than there has in education. And this has always been done under the belief that you had to design a building which would take care of the educational program in a community thirty years hence. But, there are some dangers to that because many buildings have been designed which forced communities into innovations, before they were ready for them. And innovations fail unless they are thoroughly planned.

Education will change constantly. As a result, the planning of school building will be in a constant change. But, this is one positive thing I can say to you, there is not now, and there never will be, a perfect system of instruction. And there is not now, and there never will be, a perfect school building designed. But, every building which is designed is a step closer to perfection.

TRENDS IN SCHOOL BUILDING

WILLIAM CAUDILL

I have used up over twenty or twenty-five years at this business and I have been involved in an embarrassing number of school projects. What have we learned? One thing, you never predict trends, which I am supposed to do here, in a sophisticated group like this, because some of you might live to prove I am wrong. But when we are talking about trends, I am going to talk about truisms, because you can question trends but you cannot question truisms when it has to do with my own personal experience. So, if you want to do some trends then take some of these truisms and put them in a do-it-yourself trend kit and make up your own.

Truism Number One: Buildings are important but not as important as people and programs. The most important thing, we always forget, is that a school has students in it. Give me good students any day over good teachers. I am a teacher and despite my pedagogical inadequacy, some of my youngsters are going to make good architects.

But then, teachers are more important than program. Because you can design a program, if you have any creative ability at all. All you have to do is look in the magazines and find some and copy what most of them are doing. Copy school plans, but it is pretty hard to develop a good teacher—to design a good teacher. We don't have very many Merle Stonemans around here. This never ceases to amaze me. You know, there are at least two experienced former students of Merle's in this group now who have gone way up the ladder in leadership as great teachers. This is simply a wondrful thing. Teachers over program any day.

Program over buildings (and this is architectural heresy). But with space, just enough space, you cannot get along without great buildings if buildings just simply get out of the way.

But how nice to have good students and good teachers and a real program to bring together, plus excellent facilities which have a quality of architecture to inspire students and teachers alike by providing stimulating environments for learning.

Truism Number Two: The schoolhouse as an architectural form, as the image, has not been nor will it ever be crystallized despite the attempts to do so—and we have been trying all these years. Here in Texas we passed laws in 1913 that told us just exactly what a schoolhouse should be like.

Bob knows more about these things than I do. All I know is that we couldn't build a good school in this state until we got rid of the laws. In Oklahoma they not only passed a law to tell just exactly what a school should be like, but told just exactly how to set it with the world. It had to be on a north and south axis.

Despite these things—the attempts of codes and regulations to crystallize architectural form for a schoolhouse—it hasn't been done. We have architectural fads that come along. For instance, in the 1950's you just didn't have a schoolhouse unless you had glass blocks stuck in the wall. Right now we have zig-zagged roofs and we have circular schools. We are still trying to jell this thing called a schoolhouse. We are trying to do it in thin shells and we are trying to do it through industrialization. The EFL model downstairs is certainly better than anything we have ever seen. This is a schoolhouse, it is all ready for you, you have got so many classrooms and all that is there.

But technology is not strong enough to shape a schoolhouse because education always overrides these. Doc pointed this out by saying education is going to change, and change radically. If it does, it is going to be hard to recognize a schoolhouse and believe me, this organization is going to have to change its books so fast that you will have to have three or four publication committees; one for twenty years from now, one for ten years from now, one for five years from now and one for next year.

Look what's happening right here. I can speak of Texas because we have thousands of self-contained classrooms. That takes on a certain architectural form. Doc asks about the ungraded situation, team teaching which takes a completely different kind of architectural form. Doc talks about the departmentalization in the elementary school. Well, we have it in high school right now. Port Arthur, Texas, for example, has a highly developed departmentalized high school. San Angelo has a highly developed non-departmentalized high school where they are trying to work in integrated subject matter. So here are completely different kinds of architectural forms.

We have the neighborhood school in the Spring Branch School System. This school system, as does Houston, depends on the neighborhood school. That's dear to us. People tell us that this is all wrong, that we are simply building ghetto schools, that we are actually hurting our efforts to build a great society. They say we should go through an educational park. And people are very serious about this. East Orange at New Jersey, for instance, had seriously considered tearing down every school in the whole school system and building them all in one place which would force integration of not only racial groups but different social-economical groups. And then my good friend Doc was talking about the educational aims from birth to burial. Right now we are involved in children's education. What

if we get into total education where, he says, age six is too late to start and age twenty-one is too early to stop.

We have got all kinds of problems that we have never had before and all different kinds of schoolhouses. I don't know if some of you heard my verbalizing in Atlantic City last time but I predicted that we will not have schools; but we will have educational nodes, and they will be where people are and as numerous as filling stations. A guy wants to bone up on his French because he has to go to Paris next month, so we are going to need schools at airports. We are going to need schools on the 17th floor of the Humble Building because there are people up there working on their CPA examinations. We are going to need schools in shopping centers for two- or three-year olds while their mommies are working. We are going to have schools every place and it is a great challenge to this group.

Truism Number Three: Planning is the process of subdivision of space—not adding or subtracting rooms. This is going to be one of our greatest hurdles. Doc talked about it in terms of flexibility but it is a little more than this. The word "room" should be eliminated from our vocabulary and particularly a "room" for "class" or "classroom." Educators, as you know, are breaking the rule they have had since just before the fourth century that a class is a 25 + 1 formula: 25 students to one teacher. Now, a class might be 150 + 1 or 15 + 1 or 5 + 1 or 1 + 1. A classroom (I hope we find a better name for it) might be any shape or size or volume fit to do some specific job. So, we are going to have to discard this box approach to schoolhouse planning and get on to space approach. Think in terms of space. We buy land and we don't put a box here as a building and another box here; we own the space above the land so our job is subdividing this space. Sometimes buildings can be space dividers. It is subdivision of space, how you slice it, that is important because space is a medium of planning.

Truism Number Four: A successful school plant comes about when good educators get together with good architects and their engineers. A schoolhouse, as you know, is a marriage of education-architects and neither a good architect or a good educator can go alone. This is one of the greatest contributions the Council has done, in my estimation. It has brought out the fact that one educator cannot design a school plant or one architect can't design a school plant. It takes a combination of both. If leaders of our city and/or nation are asking educators to solve the social problems, then we are in real trouble. This is an oversimplification. This little truism is expanding what I have said, because you can't do it.

We are going to have to bring in urban sociologists, psychologists, welfare workers, city planners, as well as our architects and our school plant specialists in the education field. You may have to completely change the Council because of this.

Truism Number Five: Flexibility isn't everything. I agree with Doctor Landrum that we still do not have flexible schools. There are more sins committed in the name of flexibility than anything I know. If you have a sliding door you have a flexible school; you have a wonderful modern plant. And just lots of space doesn't do it; we not only have to have flexibility in our schools, but we have to have the exactitude that comes about in a scientifically designed science-lecture hall, or in a carefully programmed and executed language lab, including these electronic aids that Doc was talking about. So, let's not take the easy road out and say we have flexible schools.

BUILDING CODES AND PROBLEMS THEY PRESENT

ROBERT LANCER

Anyone who has had any contact with building codes, as probably most of you have, has suspected that they are written or interpreted with fuzzy logic. In some cases, portions of codes seem to be completely arbitrary or politically motivated to benefit certain trades and materials. I don't know if I will get any controversy on these statements.

I would like to read just a very brief excerpt from the Houston Building Codes. It says the purpose of this code is to provide minimum standards to safeguard life, limb, health, property and public welfare by regulating and controlling the design, construction and quality of materials and structures within the city and certain equipment specifically regulated herein. Now, this is a very noble purpose: I don't see how you could attack it. Since it does sound so noble, almost everybody wants to get in on the act and for that reason codes are here to stay. Looking at what we have now doesn't take any wisdom nor is it particularly interesting, and our subject is trends. So, let's look into the future.

Here I am going to stick my neck out and forecast the trend and I don't think any one will take issue with it. Schools will gradually get more complex as time goes on. They are not the simple structures they were. As

schools get more complex, people will be tempted with financial grants from various bureaus and departments at state and national levels, and they are going to find themselves accepting some of these. If you think you have it bad with codes, I think you are in for something more like a nightmare unless there is a reversal in these trends.

Let's use the corollary of a hospital, as it is a complex building unit and finds itself accepting grants from various departments. To give you an example of what is happening in hospitals, we find ourselves not working under one code; we find that we are working under (1) the Houston Building Code, (2) the State Board of Health, (3) the Hill-Burton Act; (4) the National Institutes of Health, (5) the State Bureau of Fire Prevention, (6) the State Insurance Board, and (7) the Civil Defense Department. You know, many of these seven regulatory bodies we are working under have three or four distinct departments. This is what you can look forward to in schools. Whether you will have seven, I couldn't tell you; but you can look forward to more than at present.

Now, many of these codes are similar, with minor differences between them. These minor differences between the codes and their interpretation create staggering problems and expense. I want to give just one very simple example; I could probably find a dozen or a hundred if we looked long enough.

One common requirement in codes is that hospital corridors for bedrooms should be an eight-foot minimum width. Some codes say seven. There is a discrepancy right there, but eight is probably more common. Now, this is a logical and desirable minimum for a corridor in a hospital and the reason is that frequently they park beds out in the hall when they are cleaning or refurbishing a room. They move patients from room to room frequently on the beds, so when the two beds have to pass in the hall you need about eight feet. You are probably wondering if they *need* eight feet of continuous length. Well, obviously not, because they don't have to pass at every point. But the code says eight feet, so it becomes eight feet the whole length. In another place the code says that each bedroom must have two different exits to the outside or to a stairwell. Now you have the corridor going in two directions from every bedroom. The interpretion is generally that both these corridors must be eight feet wide although they lead to a three foot-eight inch or four-foot elevator or some other door which is rather narrow. Normally, in the typical wing this wouldn't mean much, because you have a long line of rooms on both sides. But buildings aren't that simple. You have corner rooms and you have ends of the wings and various complications in planning and the result is that sometimes you have one or two bedrooms at the end of the wings someplace being served by two 8-foot corridors and the corridors are bigger than the rooms themselves. When you follow this technically, you only push up the cost of the hospital.

We get another interpretation from maybe another source that any room with a bed in it or any room where a bed may go is a bedroom. How do they get around that? Well, the code didn't really define bedroom so somebody can interpret it that wherever there is a bed there is a bedroom. They haven't described beds so a bed can be a cot or it can be a stretcher, or anything of that nature. So suddenly you find out, by interpretation, that an examination room becomes a bedroom for the man interpreting the code and that man wants two 8-feet corridors serving the treatment rooms. Another man says that any place that a patient may sleep is a bedroom. Then you find out that you have an operating room, a recovery room, some intensive care rooms, that resemble bedrooms in that man's mind and he wants the two 8-foot corridors. This becomes a pyramiding of fact by interpretation.

These aren't jokes; some of these examples we have met and they do exist. The cost, of course, soars. You haven't seen anything until you get to a hospital, although your schools will gradually run up in price as they increase in complexity. I am saying that this is a trend and I think most of you will agree that we are in for more of this problem and not less. What to do?

1. Organize in some way to achieve a superior building code for schools and arrange for continual change. In other words, bring out a superior animal to these other things.

2. Stress that most things be recommendations rather than mandatory requirements. If this business about the eight-foot corridor would have been a recommendation instead of a mandatory flat statement we could have gotten around all this by explanation. But these things become law.

3. Try to arrange that this better code, if you can create one, supplants all others so that you don't have overlap.

4. Try to avoid having different people interpret the code. I was reading to you the same code and by interpretation all these conflicts and overlaps occur.

Now, there are certain bodies that don't follow codes at all or don't have to. State and government buildings are not necessarily built under any codes. They may elect to on occasion. But you don't find that state and federal buildings have any particularly bad record in safety. At least I haven't heard it mentioned. Old Nassau complex is, for example, on government property, built under no specific code, and I don't know that any great hazard results. I think that just codes alone don't make a thing good and safe.

How could we rewrite these codes to get better ones? Can architects do it or will they do it? I don't think individually they can. The job is

far too big for any one architect to even attempt it. As far as architects' organizations, I would like to think they would do something about it, but they are not organized to do anything about it. I am not sure it would even be in their charter to do anything. They will all agree with you and console you but I don't believe they are set up to make this type of change.

You probably are wondering how we build under these overlapping codes that I mentioned. How do we ever get a hospital built? Many people administering these various codes and regulations don't even know what is in their code. That helps. Some of them don't know what their precise authority is. They have a code and they don't know how they relate to the other ones. They don't know how their position stands in conflict with the others. Nobody has told them. They don't attempt to enforce all the sections of the code. They just choose to ignore parts of them that they want to ignore. That helps too. Most of them are reasonable men and they understand problems and when we explain them, they go along. If all these bodies would suddenly take a strict attitude and demand complete enforcement of everything in their code I just don't believe we could build a building. It has gotten that bad. If you stacked these codes all up in a row, with all their references to other codes, they would fill a shelf about four feet long.

So, in quick summary, you can look forward to more codes, more complications, more cost, and little accomplishment by the codes themselves.